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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,355	03/25/2005	Richard J. Caldwell	GB 020167	2548
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			EXAMINER YEH, EUENG NAN	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 02/26/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,355

Applicant(s)

CALDWELL, RICHARD J.

Examiner

Eueng-nan Yeh

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 17 is/are rejected.
- 7) ☒ Claim(s) 4-16 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>Nov 17, 2005</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention, "Method and apparatus for encoding image and or audio data" is too general to reveal the real intention to which the claims are directed. A new title is suggested: "Method and apparatus for encoding image and or audio data capable to remove artifacts".

Claim Objections

3. Claims 4-16 and 18 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot dependent from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4-16 and 18 have not been further treated on the merits.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 18 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 18 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory

for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent such as "A computer readable medium stores a program ..."; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission

medium”, the examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Nio et al. (EP 0998 146 A1) and Fletcher (104th AES Convention in Amsterdam, May 1998, pages 1-15).

Regarding claims 1 and 17, Nio discloses:

analysing (300) the received data to detect artefacts contained within the data indicating that the data has been through a previous encoding and decoding process (105,110,140) of the same type (as depicted in figure 5, numeral 20 showing the structure of a block noise detecting apparatus 20 analyzing the received video signal #101 where numeral 25 is “a block edge controlling part (hereinafter, referred to as BE controlling part) 25” at column 27, line 20. The BE, shown in figure 7, illustrates the decoded artefacts of the encoded data);

extracting by analysis of said artefacts information as to the structure imposed on the data by said previous encoding process (as depicted in figure 7, "FIG. 7 is a diagram exemplarily illustrating how the BE controlling part ~~34~~ 25 in FIG. 5 is operated" at column 27, line 40. Figure 7(c) shows the extracted structure imposed on the previous encoding process).

Nio does not explicitly disclose the re-encoding process.

Fletcher, in the same field of endeavor of re-coding process ("coding decisions can be conveyed using a MOLE' signal and how this signal can be used for optimum re-encoding" at page 1, line 10), teaches a way to preserve the quality of re-coded data "When a coded audio signal is decoded, extra data is buried alongside the decoded audio which describes in detail how it was previously coded. This data is the MOLE signal ... When the audio needs to be encoded again, a special encoder will look for a MOLE signal within the audio and, if one is present, will use it to perform an optimum re-encoding" at page 1, bottom paragraph. "...a series of experiments using a software encoder and decoder in which a signal was passed through two encode-decode processes. The alignment of the signal when presented to the second encoder was varied and the noise introduced by the second encoder was measured" at page 5, line 12. Furthermore, "If a signal is encoded once with a certain alignment and is then, after decoding, re-encoded by a second encoder, the subband samples in the second encoder will be significantly different from what they were in the first encoder, unless the alignment of the Input signal is the same" at page 5, line 5. As known in the art of MOLE application is for the maintenance of the quality of the audio and/or video signal

when concatenating codecs, by feeding forward the previous coding decisions.

Without departing from the scope and spirit of Fletcher's methodology, this technology can apply to audio/video re-encoding with extracted structure substantially aligned.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to include the coding system Nio made with the optimum re-coding technology as taught by Fletcher, in order to have "no quality loss die to the decode-recode process" at page 2, line 11.

Regarding claim 2,
the received data represents an image (IV), such as an image received through an analogue transmission (120) or storage (160) process (as depicted in Nio figure 5, numeral 101 is the input video signal "A video signal is, in general, a signal obtained by one-dimensionally positioning three-dimensionally structured (horizontal/vertical/temporal) dynamic image data. A video signal 101 in the present invention is a one-frame image 112 being a two-dimensional video signal both in the horizontal and vertical directions of one-frame time unit obtained in accordance with the above-described video signal, and also is a signal transmitted at a constant rate ..." in paragraph 95, line 1);
the structure (200, 210, 220, 230) imposed by the encoding process including a spatial structure in which pixels of the image are processed in blocks (as depicted in Nio figure 7, structure block boundaries are shown in figure 7(a));

the encoding being performed so as to align block boundaries of the encoding process substantially with block boundary artefacts present in the received image data as a consequence of the previous encoding process (discussed in claim 1, the re-encoding will base on the extracted block structure substantially aligned).

Regarding claim 3, imposes a spatial structure in which the blocks of pixels are grouped into macroblocks (as depicted in Nio figures 7(a) and 7(c), the spatial structure of blocks of pixels are grouped into macroblocks);
the encoding being performed so as to align macroblock boundaries of the encoding process substantially with macroblock boundary artefacts present in the received image data as a consequence of the previous encoding process (discussed in claim 1, the re-encoding will base on the extracted macroblock boundary structure substantially aligned).

Conclusion

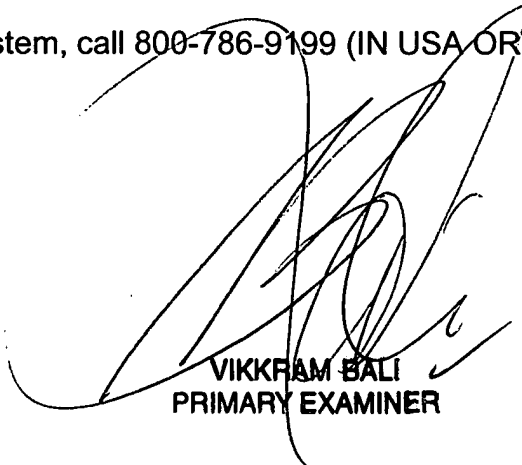
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Gunji et al. (EP 1 168 651 A2): optimizing audio re-coding.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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